

CLAIMS

1. A method of recognising an image, comprising the steps of :
 - a. processing the image to provide an image set containing a plurality
5 of different processed images;
 - b. combining the processed images in the image set;
 - c. transforming the data space occupied by the processed images in
the image set;
 - d. generating, from the image-set represented in the transformed
10 data space, an image key representative of the image; and
 - e. comparing the image key with at least one previously stored image
key of a known image.
2. A method according to claim 1, wherein step a. includes extracting
image features including at least one of edges, lines, wavelets, gradient
15 components, curvature components and colour components.
3. A method according to claim 1 or 2, wherein step b. is carried out prior
to step c.
4. A method according to claim 1 or 2, wherein step c. is carried out prior
to step b.
- 20 5. A method according to claim 1, 2 or 3, wherein step e. comprises
comparing the image key with just one previously stored image key, to verify the
identity of the image.

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6. A method according to claim 1, 2 or 3, wherein step e. comprises comparing the image key with a plurality of previously stored image keys, to identify the image.
7. A method according to claim 6, comprising the further step of sorting
5 the results of the comparison in step e. to produce a list of potential matches with previously stored image keys.
8. A method according to claim 6 or 7, wherein step e. is carried out using a Euclidean distance metric (the L2 norm), mahalanobis distance metric or a cosine distance metric.
- 10 9. A method according to any of the preceding claims, including the step prior to step a. of rotating and/or positioning the image to a predetermined orientation and/or position and/or depth normalisation.
10. A method according to any of the preceding claims, including a step prior to step b. of normalising data prior to combination.
- 15 11. A method according to any of the preceding claims, wherein said image is obtained from a camera.
12. A method according to any of the preceding claims, wherein said image comprises 3D data.
13. A method according to any of the preceding claims, wherein said image
20 comprises 2D data.
14. A method according to claims 12 and 13, wherein said image comprises a registered 2D-3D image pair.

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15. A method according to any of the preceding claims, wherein step c. is carried out by a Principal Component Analysis method.
16. A method according to any of claims 1 to 14, wherein step c. is carried out by Fisher's Linear Discriminant Analysis method.
- 5 17. A method according to any of the preceding claims, wherein said image is an image of a face.
18. A method according to any of the preceding claims, wherein said image is an image of a human face.
19. A method according to any of the preceding claims, wherein said image
10 is a natural image.
20. A method according to any of the preceding claims, wherein said image set includes the original image.
21. A method of recognising an image, the method being substantially as hereinbefore described with reference to the accompanying drawings.
- 15 22. Apparatus for recognising an image, the apparatus comprising:
- a. processing means arranged to process the image to provide a plurality of different processed images;
 - b. combining means arranged to combine the processed images;
 - c. reducing means arranged to reduce the data space occupied by the
20 processed images;

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- d. generating means arranged to generate from the combined and reduced processed images an image key representative of the image; and
 - e. comparison means arranged to compare the image key with at least one previously stored image key of a known image.
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23. Apparatus according to claim 21 and arranged to perform a method according to any of claims 1 to 20.
24. Apparatus for recognising an image, the apparatus being substantially as hereinbefore described with reference to the accompanying drawings.
- 10 25. A method of recognising a three-dimensional image, comprising the steps of :
- a. transforming the data space occupied by the image using Fisher's Linear Discriminant Analysis;
 - b. generating, from the transformed data space, an image key representative of the image; and
 - c. comparing the image key with at least one previously stored image key of a known image.
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26. Apparatus for recognising a three-dimensional image, the apparatus comprising:
- a. means for transforming the data space occupied by the image using Fisher's Linear Discriminant Analysis;
 - b. means for generating, from the transformed data space, an image key representative of the image; and
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- c. means for comparing the image key with at least one previously stored image key of a known image.